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Allergic Contact Dermatitis to White Pine Sawdust

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Abstract

To the Editor. —The incidence of irritant and allergic contact dermatitis from wood is small; however, it effects workers in occupations such as foresters, carpenters, boat builders, and cabinetmakers. The clinical picture of contact dermatitis to sawdust usually begins in the exposed areas of the arms, face, and neck, with later involvement of the sweaty intertriginous regions of the axillae and groin. The purpose of this communication is to describe a cabinetmaker who developed allergic contact dermatitis of the face, neck, and hands from white pine sawdust. The Western white pine, *Pinus monticola*, is one of our most valuable timber trees.¹ It grows in British Columbia, the Pacific states, and eastward to Idaho and Montana. The soft, lightweight wood of white pine warps and checks less than most timbers and has various uses. It is in demand for general

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The purpose of this communication is to describe a cabinetmaker who developed allergic contact dermatitis of the face, neck, and hands from white pine sawdust. The Western white pine, *Pinus monticola*, is one of our most valuable timber trees.¹ It grows in British Columbia, the Pacific states, and eastward to Idaho and Montana. The soft, lightweight wood of white pine warps and checks less than most timbers and has various uses. It is in demand for general construction work, interior finish, cabinetmaking, and pattern making. It is also a great shade or ornamental tree and is planted for that purpose in Europe.

Report of a Case.—A 65-year-old cabinetmaker had been working with pine wood since 1975. Beginning in 1984, he developed a pruritic dermatitis involving predominantly the exposed skin of the head, neck, arms, hands, and upper trunk. He worked with various types of woods, including birch, oak, and white pine, but noticed a significant decrease in dermatologic symptoms for approximately 1 year (from 1989 through 1990), when he had no contact with white pine wood. Other products with which the patient had contact included glue, varnishes, and contact cement. The patient noticed an exacerbation of his symptoms on a vacation when he camped near many pine trees. He had no other significant medical history and denied previous dermatologic disorders.

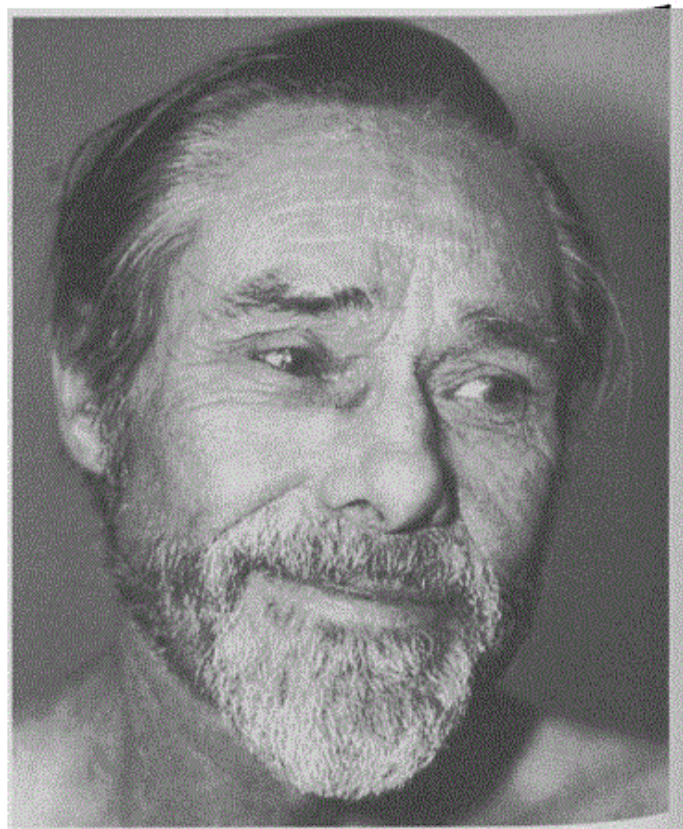
Because of the strong suspicion of contact dermatitis to wood, the patient was patch tested to white pine, birch, and oak sawdust (10% petrolatum for each). He was also patch tested to the North American Contact Dermatitis Group standard, vehicle and preservative trays, and to a series of 24 plant antigens (purchased from BM Hausen, Hamburg, Germany).

Ten volunteer control subjects were patch tested to white pine sawdust (10% petrolatum) to test for irritant effects. All patches were applied to subjects' backs for 48 hours using Finn chambers and were interpreted at 48 and 96 hours according to North American Contact Dermatitis Group guidelines.

The subject had a reaction (1+) to 2,6-dimethoxy-1,4 benzoquinone, a reaction (1+) to pine sawdust (10% petrolatum), a questionable reaction to colophony (20% petrolatum), a reaction (2+) to chloroxyleneol (1% petrolatum), a reaction (1+) to epoxy resin (1% petrolatum), and a reaction (1+) to *p*-chloro-*m*-cresol (1% petrolatum). Ten control subjects had no reaction to the white pine sawdust (10% petrolatum). The positive reactions to the sawdust and benzoquinone were relevant to our subject's occupation as a cabinetmaker. His positive reaction to epoxy was relevant to his hobby of building model airplanes. The remaining reactions had unexplained relevance.

Comment.—*Pinus monticola* is commonly known as the Western white pine and is a member of the *Pinaceae* family. This family includes two other important white pines, *Pinus strobus*, the Eastern white pine, and *Pinus lambertiana*, the sugar pine. The most important timber trees in the world, the *Pinaceae* family, are characterized by blue-green slender needles grouped in clusters of five. The needles house one vascular bundle and bear fascicles of no more than five leaves. Pine trees grow rapidly, straight, and tall (often reaching 30 m in height and 1.20 m to 1.50 m in diameter) making them ideal for lumber. Sixty-five species are native to North America, with 36 of them growing in the United States, especially in mountainous areas. Its wood is also suitable for pulp and paper manufacturing. White pine is a straight-grained softwood that is fairly free from resin, easily worked, and used for many purposes.¹⁻³

Although *Pinus* species are extensively cut for wood and



Dermatitis from white pine sawdust involving exposed areas of the skin.

uncommon. In a study by Mitchell and Rook,⁴ patch tests to an acetone extract of pine wood showed positive results in two of 125 forest workers with dermatitis. Although acetone extracts of balsam of pine are sensitizing, most dermatitis due to *Pinus* comes from its derivatives, oil of turpentine and colophony. Our patient had a questionable reaction to colophony. Shavings of the wood as well as the oil of pine chips have produced dermatitis in woodworkers and rope makers, respectively. Another study found five carpenters with contact dermatitis who manifested positive patch test reactions to pine wood sawdust and extracts.⁵

Our patient was allergic to sawdust of the white pine wood used in his cabinetmaking. He had a positive reaction to pine sawdust and 2,6-dimethoxy-1,4 benzoquinone, the latter being a chemical found in woods. He avoided white pine and had a marked improvement in his dermatitis.

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